



HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

3430 Courthouse Drive

■ Ellicott City, Maryland 21043 ■

410-313-2350

Voice/Relay

Valdis Lazdins, Director

FAX 410-313-3467

HOWARD COUNTY AGRICULTURAL LAND PRESERVATION BOARD (ALPB) STATE AGRICULTURAL PRESERVATION ADVISORY BOARD (APAB)

July 25, 2016

Staff Report

Owners: B. David Patrick, III, Dennis J. Patrick and Michael Patrick
1960 Daisy Road
Woodbine, MD 21797

Farm Location: "Maple Dell Farm"
West side of Daisy Road, Tax Map 7, Parcel 141; 93 +/- acres

Easement Designation: MALPF easement #13-80-06Dex1

Request: Review and recommendation of approval by the Howard County Agricultural Preservation Advisory Board of the request to create a stream restoration overlay easement

Recommendation: Approval to MALPF for the overlay easement

Summary:

Mary Patrick, along with her two sons, B. David and James, placed the farm in the Maryland Agricultural Land Preservation Foundation (MALPF) program on May 31, 1983. Mary and James have subsequently passed away. The farm is currently owned by David and his two sons, Denny and Michael. Previous requests include a child lot for Denny, and a lot around a pre-existing dwelling that is resided in by James's widow. The current request is to place a stream restoration overlay easement on approximately 15 acres along 6,182 linear feet of stream. The project will also include the selective harvesting of 10.6 acres of trees to establish new pasture, and the installation of 4,527 linear feet of new fencing around the pastures.

Background:

Maple Dell Farm is a 93-acre active dairy and row crop farm, one of three remaining dairy farms in Howard County. It is located on either side of Cattail Creek, within the Brighton Dam subwatershed of the Patuxent River. Two smaller channels merge on the northwestern portion of the farm to form the mainstem of Cattail Creek, which continues east through the farm directly to the Triadelphia Reservoir, a major drinking water source for over a half million residents in Montgomery, Prince George's and Howard counties.

Historically, the 190 dairy cattle would roam throughout the floodplain on the property, including having full access to nearly the entire length of the stream channel. They are currently limited to specific areas in compliance with relevant state laws. However, the damage to the stream over the years is irreversible without intervention. Because of the heavy use this land has seen, erosion is evident along the entire stream and heavy sedimentation is visible in the stream. The majority of the channel has no trees or vegetation lining the banks and averages a 4 foot eroded bank throughout the property. A few sections of the stream bank have been compacted and slope down to the stream where the cattle regularly

accessed, wallowed or crossed. Significant levels of nitrogen and phosphorus enter the stream from waste while the cattle are in the stream and floodplain, as well as waste runoff from the adjoining pasture.

The cattle feeding areas are roughened concrete floors, which are scraped and cleaned according to the property's nutrient management plan. However, the ridges in the floor prevent full removal of manure and urine, which is then washed off during precipitation events into the stream.

Proposal:

There are several different elements to the proposal:

- 1) The project will fence cattle out of approximately 15 acres of floodplain, currently used as pasture. All in all, 13,560 linear feet of fencing will be constructed enclosing the cattle pasture areas and stream restoration easement area. Three cattle stream crossings will be improved and fenced off to prevent upstream and downstream access along the stream. Specifically, the stream crossings include one 40 foot wide ford crossing, one 35 foot wide ford crossing, and one 60 foot wide culvert crossing.
- 2) A new water system will be installed for the cattle to access clean water from troughs placed throughout the pastures. The service provider will install or provide funds for up to 7 watering stations for the cattle. In addition, the existing well on the farm will either be repaired or replaced.
- 3) Natural stream channel restoration of the entire 6,182 linear feet of stream and riparian wetland will include riffle grade controls and bank modification. Field areas adjacent to the stream and restored wetland will temporarily hold, infiltrate, and treat stormwater flow, restoring the groundwater table and hopefully returning the land to the original wetland hydrology.
- 4) A best management practice (BMP), likely a catch basin that will be pumped to the existing lagoon, will be installed northeast of the feed lot and barn area to intercept runoff from the concrete floors and greatly reduce nutrients entering the stream. Additionally, new roof gutters will be installed on the barn as a way to direct and mitigate stormwater runoff.
- 5) Native plant communities will be reestablished in the project area to create a stream buffer, reduce erosion, filter nutrients, and slow stormwater flowing to the stream. The restored wetland areas will support shallow vernal pool habitat.
- 6) Approximately 10.6 acres of timber will be thinned and cleared on the western boundary of the farm to create new pasture to offset the loss of pasture in the floodplain. This work will be responsibly undertaken with any required permits and consultation with local, state and federal agencies as needed. The steeper slopes will remain forested to prevent erosion and also provide shade. The remnants of timber, including the cut trees and stumps, will be utilized in the stream restoration work as much as possible. The thinned and cleared areas will be immediately stabilized with temporary and permanent pasture grasses and mulched.

If approved, the proposed work will be completed during 2017 and 2018 by Resource Environmental Solutions, LLC (RES). RES has coordinated project planning efforts with the Howard County Office of Community Sustainability (OCS) and the Howard Soil Conservation District (SCD). SCD has assisted RES by completing a baseline soil survey of the property. The Howard County OCS is the primary point of contact agency for RES and is responsible for ensuring that the project area will be protected by a perpetual easement.

Benefits of Project:

Maple Dell Farm is protected by a Maryland Agricultural Land Preservation Foundation easement. The landowners have agreed to take further steps in the protection of the property by placing a permanent restrictive conservation easement on the subject portions of the property. This project has many environmental and agricultural benefits. The stream on the property has a drainage area of approximately 2,400 acres to the Triadelphia Reservoir and the Patuxent River. At the upstream end of the project site, two channels join to form the mainstem of Cattail Creek. Three additional first order tributaries enter Cattail Creek within the project site boundaries. All of these stream reaches are located in the dairy farm pasture areas, with only a sparse or absent riparian forest stream bank cover along the mainstem. A large mapped wetland is located on the mainstem in the middle of the project area, but little wetland character is present in this location. Floodplain areas have been cleared of trees and maintained in pasture cover.

The restoration and repair of approximately 6,182 feet of stream and riparian wetland buffer will support base flow discharge while diverting storm flow discharge into adjacent field areas. This will temporarily store, treat, and infiltrate precipitation discharges and will contribute to the restoration of the shallow groundwater table. These efforts will improve the wetland hydrology of the site and the quality of the water moving through the property. They will also serve to reverse the effects of watershed changes that have increased runoff volumes, peak discharges, velocities and erosive forces. For a more in-depth description of the environmental benefits of the project, see the attached internal memorandum entitled, "Rationale of a Site Selection – Stream Restoration on Maple Dell Farm, Inc."

In addition to the many environmental benefits, the proposed project will provide improvements to the agricultural operation of the property as well. These include:

- 1) Approximately 13,560 linear feet of fencing along the easement as well as to create new pastures and enhance existing pastures for rotation (3 or 5 strand high tensile electric fence on treated wood posts built to NRCS specs).
- 2) One new well (or replace pump in existing well with fund for future maintenance).
- 3) Seven cattle watering stations (4 ball, no freeze). Beef Cattle have been proven to gain more weight when drinking from cattle watering stations compared to drinking from the creeks. They want to drink more water when it is cold and particle/contaminate free.
- 4) Eight no-freeze yard hydrants (1 at the well and 1 near each watering station).
- 5) Three stream crossings for livestock and farm equipment (2 concrete fords –either panels or poured concrete and 1 culvert crossing) built to H-20 requirements.
- 6) Ten acres of new shaded pasture area (selective timber harvest will be used to optimize forage grasses while still keeping shade/trees in areas prone to erosion).
- 7) Gutters will be added to all barns as needed to divert storm water to the lagoon.
- 8) A catch basin for manure at the storm water outlet from the feed lot which will be pumped into the lagoon.

Additional Considerations:

The subject property is encumbered by a MALPF easement, so this project must be determined by the MALPF Board to be consistent with their laws and policies. MALPF does not have a specific policy for a stream restoration overlay easement, so there has been discussion with MALPF staff and counsel about the applicability of other similar policies or laws to this project. The issue at hand is that the closest relevant type of easement, which is for forest conservation, has a 10 acre overlay maximum. MALPF's wetland mitigation policy has a 5 acre maximum. MALPF staff's position so far has been that the current proposal, which will affect approximately 15 acres of stream and stream buffer areas, is excessive relative to what their existing laws and policies allow. The County's position is that the forest and wetland mitigation guidance documents are not directly applicable to the proposed stream restoration easement for a number of reasons, including the fact that the stream restoration project is not for mitigation purposes. It is also important to note that the forest and wetland mitigation easements involve the removal of land from agricultural use, whereas this project includes the stream, which as a water of the State, is not open to agricultural use. Consequently, the County has worked with several cooperating agencies to create guidelines, based on existing State and local law, and MALPF policies, which justify the use of stream restoration easement overlays on MALPF easements. See the attached letter from County Executive Kittleman to MALPF explaining the County's position.

Staff Recommendation:

Staff recommends approval of the request to create a stream restoration easement, subject to MALPF Board approval.

Prepared by:  Date: 7/19/14

Joy Levy, Administrator
Agricultural Land Preservation Program

Attachments:

Aerial Photo

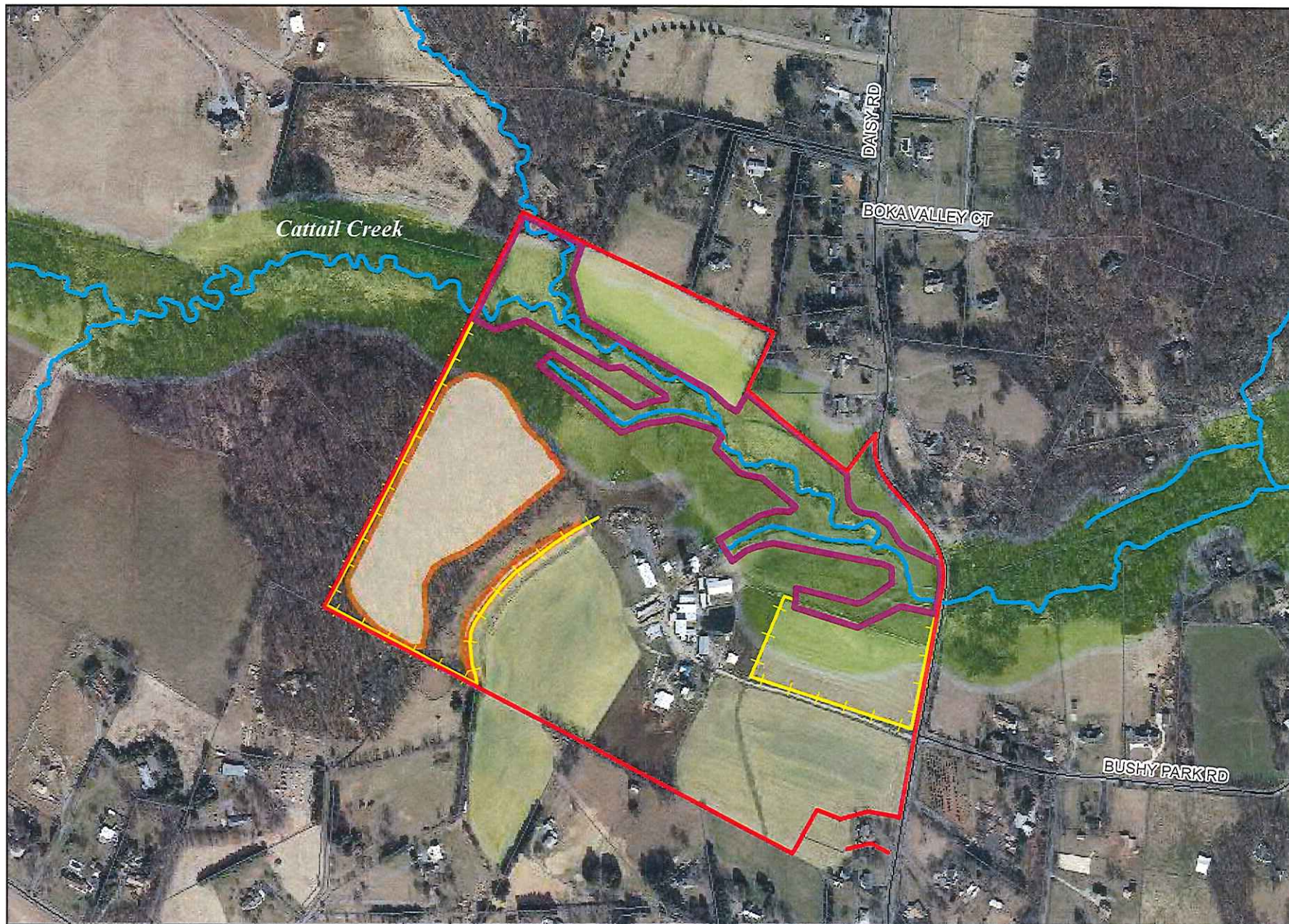
Zoomed In Aerial

Preservation Map

Soils Map

Letter from County Executive Allan Kittleman to MALPF

An internal memorandum entitled, "Rationale of a Site Selection – Stream Restoration on Maple Dell Farm, Inc."

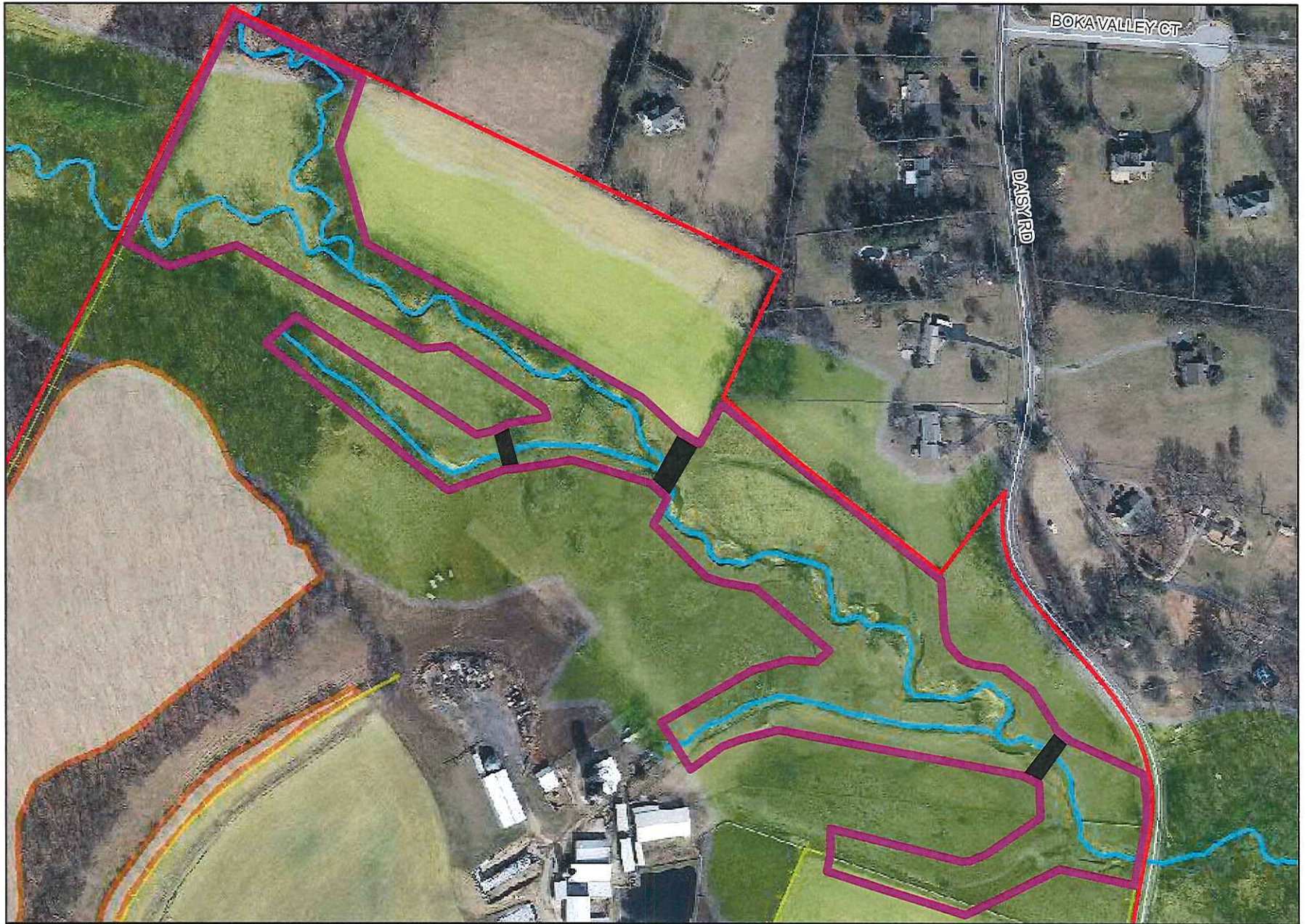


Maple Dell Farm Inc., Tax Map 7, Parcel 141

Aerial

By: Joy Levy
Resource Conservation Division
Map Width: 5,290 ft.
Print Date: 07/19/2016

- | | | |
|--|---------------|---|
| Property Line | Cattail Creek | New Fence (+/- 4,527.3 L.F.) |
| Stream Restoration Easement (+/- 15.0 ac)
Easement Boundary Fence Line (+/- 9,032.8 L.F.) | | Timber Harvest / New Pasture (+/- 10.6 ac) |
| | | Green Infrastructure Corridor: Carrs Mill West (500 Ft. wide) |



Maple Dell Farm Inc., Tax Map 7, Parcel 141

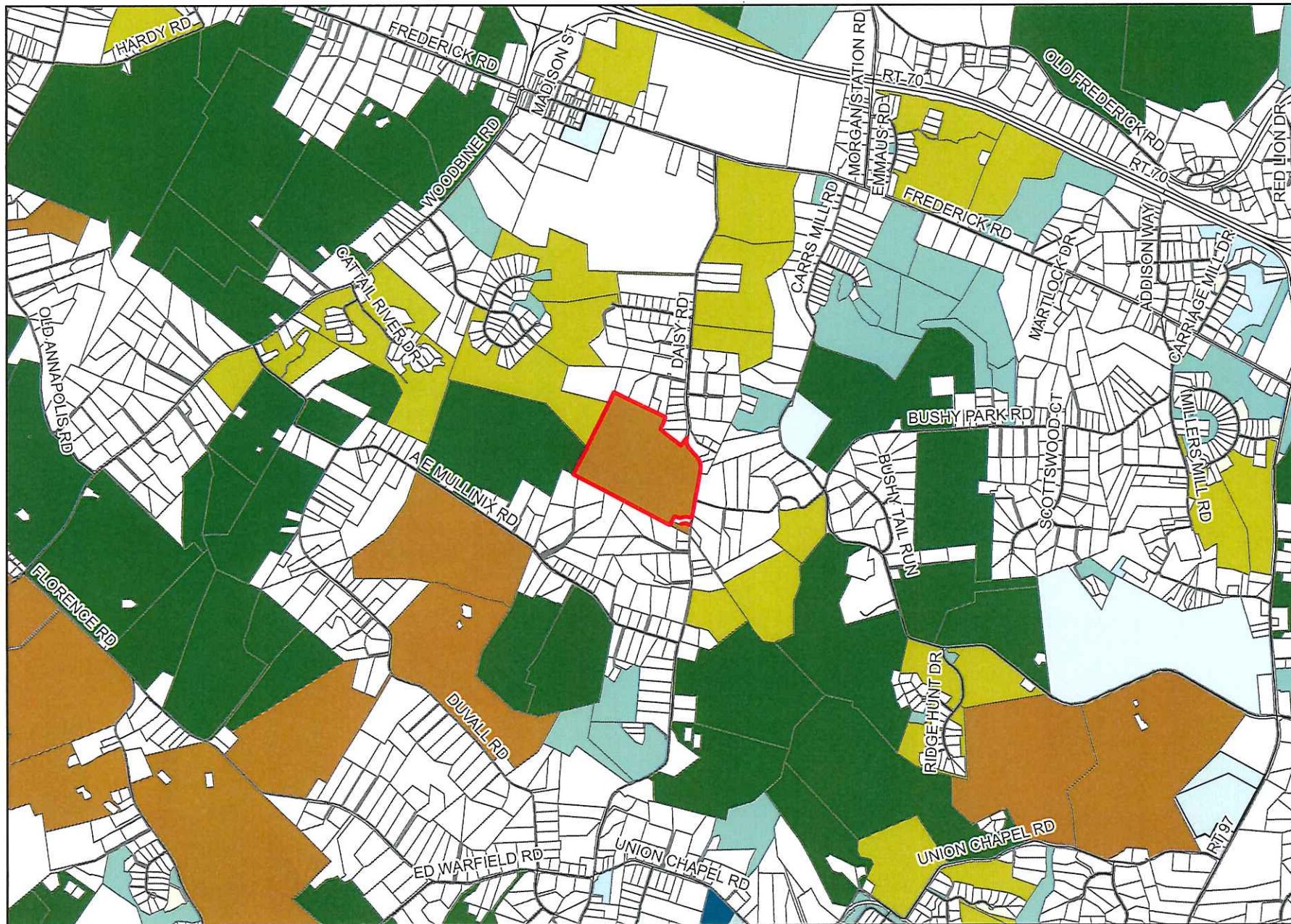
Zoomed-In Aerial

- Property Line
- New Fence (Pasture)
- Timber Harvest

- Fenced Easement (+/- 15.0 ac)
(Easement Fence: +/- 9,032.8 L.F.)
- Fenced Animal Crossovers

- Cattail Creek
- Green Infrastructure
Corridor (500 Ft Wide)

By: Joy Levy
Resource Conservation Division
Map Width: 2,420 ft.
Print Date: 07/19/2016



Maple Dell Farm Inc., Tax Map 7, Parcel 141

Land Preservation

By: Joy Levy
Resource Conservation Division
Map Width: 4.8 mi
Print Date: 04/15/2016



HOWARD COUNTY OFFICE OF COUNTY EXECUTIVE

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June 28, 2016

Ms. Carol West
Executive Director
Maryland Agricultural Land Preservation Foundation
50 Harry S. Truman Parkway
Annapolis, MD 21401

Dear Ms. West:

I am writing about a unique public private partnership that Howard County has been working on with the Howard Soil Conservation District and Maple Dell Farm, a dairy farm owned and operated by the Patrick Family. The goals of the project are to restore and conserve natural resources including water quality, while also supporting agriculture by establishing a sustainable basis for future agricultural operations. There are many parts to the project but the central pieces are the restoration of 6,246 linear feet of a stream called Cattail Creek, which will be fenced to prevent damage by livestock, and the establishment of new watering systems and waste management infrastructure that will enhance existing dairy operations. The stream restoration project will require that the County obtain a Stream Restoration Easement over the stream area to ensure the preservation of the restoration work. The restoration work will result in significant nutrient load reductions that will benefit a reservoir of the State and help meet State goals related to the Chesapeake Bay Total Maximum Daily Load (TMDL).

The Patricks have been keen stewards of agriculture in Howard County for many years and there is a Maryland Agricultural Land Preservation Foundation (MALPF) easement on the farm dated May 12, 1983. I understand that MALPF has established certain guidelines and policies regarding the use of overlay easements on properties where MALPF easements exist. Unfortunately, there does not seem to be any guidance or criteria specific to Stream Restoration Easements. Guidance documents on forest conservation easements and wetland mitigation easements are not directly applicable in the stream restoration context for a number of reasons, including the fact that they are oriented to mitigation projects, which the Howard County project is not. Additionally, forest conservation and wetland mitigation easements involve the removal of land from agricultural use, whereas the stream restoration easement includes an area that is not open to agricultural use, the stream, which is a water of the State. Consequently, Howard County has been working with the Soil Conservation District, the Department of Agriculture, and others in MALPF to craft guidelines, based on existing State and local law and MALPF policies, which justify the use of Stream Restoration Easement overlays on MALPF easements.

We look forward to discussing the attached justification with you, and look forward to a positive resolution that will benefit all parties.

Sincerely,

A handwritten signature in blue ink, appearing to read "Allan H. Kittleman", with a long horizontal flourish extending to the right.

Allan H. Kittleman
Howard County Executive

Enclosure: Stream Restoration Easement Overlay Justification

cc: James Caldwell, Office of Community Sustainability
Robert Ensor, Howard Soil Conservation District
Secretary Bartenfelder, Maryland Department of Agriculture
Secretary Grumbles, Maryland Department of the Environment

STREAM RESTORATION EASEMENT OVERLAY JUSTIFICATION

This document identifies the legal and policy basis for a Stream Restoration Easement overlay on a Maryland Agricultural Land Preservation Foundation easement at Cattail Creek.

State Law

The Agriculture Article of the Maryland Annotated Code states that the purpose of the Agricultural Land Preservation program is to:

- (1) Provide sources of agricultural products within the State for the citizens of the State;
- (2) Control the urban expansion which is consuming the agricultural land and woodland of the State;
- (3) Curb the spread of urban blight and deterioration; and
- (4) Protect agricultural land and woodland as open-space land.

AGRIC. § 2-501. Allowing a Stream Restoration Easement overlay on a MALPF easement supports these goals. In 2011, the General Assembly amended State law regarding the criteria that must be considered in prioritizing agricultural easement applications to include consideration of whether the proposed land drains to a reservoir. AGRIC. § 2-508(d). The objective of utilizing agricultural preservation easements to protect water quality, preserve open space, and protect agricultural land is supported by allowing a stream restoration easement overlay, particularly where the stream drains to a reservoir, as Cattail Creek does.

State law generally prohibits non-agriculture commercial, industrial, and residential uses on MALPF easements. AGRIC. § 2-513(b); COMAR 15.15.01.17B. “Normal agriculture operations performed in accordance with good husbandry practices” are permitted by right. AGRIC. § 2-513(a); COMAR 15.15.01.17A. Stream restoration activities are “normal agriculture operations” so those activities are permitted on MALPF easements. In this instance, there is an added layer of the need for an overlay easement to provide for ongoing maintenance and preservation of the stream restoration. MALPF may allow overlay easements, but permission must be in writing. COMAR 15.15.01.17F(1).

MALPF Law and Policy

MALPF has adopted a Foundation Policy on overlay easements. The purpose of the policy is to protect and maintain the agricultural potential of farm properties and not interfere

with agricultural operations. Examples are identified, which include “Environmental Easements.” The proposed Stream Restoration Easement is an Environmental Easement.

Four conditions are identified in the Policy. Three are easily met in this instance: access areas must be defined, permitted activities must be identified, and the proposed easement must have minimal interference on farm operations. The final condition is that “agricultural operations may not be prohibited in the proposed easement area, unless otherwise approved by the Board.” Here, State, federal, and local law already prohibit agricultural activities in the stream itself, which constitutes the dominant area of the proposed easement. Pre-existing prohibitions on agricultural use in the stream mean that the proposed easement overlay is not removing the area of the stream from agricultural use because it is not subject to agricultural use, except in the way it is being preserved by the proposed easement overlay. Additionally, it is a good husbandry practice to fence cattle out of streams, which will be accomplished as part of the proposed easement overlay.

The area of land immediately adjacent to the stream, the stream buffer, is also an area where agricultural operations are limited. Maryland Department of Agriculture (MDA) regulations prohibit any nutrient application within 10-feet of a stream and within 35-feet if by broadcast application. COMAR 15.20.07.02; *Maryland Nutrient Management Manual*, Part D.II (Md. Dept. of Agric. 2012). The buffer is referred to as a “setback.” Vegetation within the 10-foot setback may not include crop plants. *Id.* Livestock must be kept out of this setback, “to prevent direct deposition of nutrients with the setback.” *Id.* The *Nutrient Management Manual* specifically requires that livestock be moved across streams “only through stream crossings designed to prevent erosion and sediment loss.” *Id.* Appropriate stream crossings will be included in the Stream Restoration Easement overlay. Hence, there is ample justification for Board approval of an overlay that prohibits agricultural operations within the easement area.

The demand for Forest Conservation Easement overlays on MALPF easements has led to promulgation of regulations governing their use. COMAR 15.15.13. The regulations are not applicable to Stream Restoration Easements, but they provide a useful framework for considering Stream Restoration Easements. Fundamental to the regulations are requirements that an overlay “serve a legitimate resource conservation purpose under a soil conservation and water quality plan or forest stewardship plan.” COMAR 15.15.13.03D. The overlay must contribute

to “good land and environmental resource stewardship on the farm.” *Id.* The overlay must also be “an appropriate best management practice (BMP) to achieve the resource conservation objectives for the farm.” *Id.* The proposed Stream Restoration Easement is in accord with these criteria. It serves an obvious resource conservation function in terms of water quality.

Improving water quality is an important State goal, required by the Chesapeake Bay TMDL, and represents good land and environmental stewardship. Stream restoration is an appropriate BMP. The guiding specification used to design the proposed stream restoration project will be the U.S. Department of Agriculture Natural Resource Conservation Service (USDA NRCS) *Stream Habitat Improvement and Management Specification*.

Other elements of the Forest Conservation Easement regulations are also informative. For example, the procedure laid out for County and MALPF easement overlay applications provides a template for a process to approve the proposed Stream Restoration Easement. COMAR 15.15.13.04 and .05. This includes the following:

1. Requiring a current soil conservation and water quality plan that describes the resource conservation purpose served.
2. Requiring the proposal be submitted by a county program administrator to the Maryland Department of Agriculture Office of Resource Conservation for their review.
3. Submission of the proposal and staff recommendation to the MALPF Board for a determination of whether the proposed overlay is consistent with the Foundation’s mission and is appropriate for the proposed property.

The regulations also provide criteria for the consideration of Forest Conservation Easements, COMAR 15.15.13.05C, some of which are applicable to Stream Restoration Easements:

- The restrictions that would be imposed on the current and future production options for the *land* (in this case limited to the stream buffer areas as the *stream* is not useable agricultural land).
- The effect of the proposed easement on the ability of subsequent owners to conduct profitable agricultural activities on the land
- The amount of land proposed for an easement overlay.
- The productivity of the soil
- The resource conservation purpose being served.
- The recommendation of the county ag board
- Any other appropriate considerations

Other criteria that could be considered in the context of Stream Restoration Easements are:

1. Whether the stream restoration represents good land and environmental resource stewardship on the farm.
2. Whether the stream restoration will be based on USDA NRCS criteria.
3. Whether overall water quality of the stream will be improved for the farm and downstream uses.
4. Whether the stream restoration is associated with additional efforts to enhance agricultural operations.
5. Whether the stream restoration will contribute to other resource conservation goals, such as CREP projects, EQIP projects, and State and local Green Infrastructure Networks.
6. Whether the easement is necessary for the stream restoration project.
7. Whether the easement includes appropriate stream crossings.
8. Whether the easement contributes to meeting nutrient reduction goals under the Bay TMDL.

Here, the Stream Restoration Easement overlay will be based on USDA NRCS standards and will improve water quality in association with other substantive improvements to the agricultural operations at the farm, which is in a Green Infrastructure Network. The overlay is necessary because of the need to ensure that nutrient reductions are preserved over time through ongoing maintenance. Nutrient reductions assured over time are important State agricultural and resource conservation goals required by the Bay TMDL. By ensuring the preservation of the stream restoration, in concert with the implementation of other agricultural improvements, the easement overlay supports the preservation of agriculture at the property.

Howard County Law and Policy

Additional guidance for Stream Restoration Easements on MALPF easements can be found in Howard County's implementation of agricultural land preservation and resource conservation activities. Similar to MALPF, the Howard County Agricultural Land Preservation Board has adopted a Forest Conservation Planting easement overlay policy for use on Howard County Agricultural Land Preservation Program parcels. The policy limits overlay easements to certain areas, including within 100-feet on either side of a stream. This is recognition of the fact that buffers are necessary to protect streams, in terms of structural integrity and water quality.

In accord with State law, Howard County has adopted laws that demonstrate the importance of stream buffers. Pursuant to Howard County Code § 16.116(a), development of property is restricted within 55-feet of an intermittent stream bank, 75-feet of a perennial stream bank for certain streams in residential districts, 100-feet of a perennial stream bank for Use III and IV streams; and 55-feet of a perennial stream bank in nonresidential zoning districts. Cattail Creek is a Use III-P stream and the property is zoned RC-DEO, which allows residential. Thus, development of the property would be subject to a 100-foot stream buffer. However, the stream is located in a Green Infrastructure Network. Howard County's Green Infrastructure Network, defines a stream buffer corridor as a minimum of 150-feet per side measured from top of bank, with an ideal buffer of 250-feet per side measured from top of bank. This section of stream is an important Green Infrastructure Network corridor, connecting the Patuxent and Patapsco watersheds and providing water to a Nontidal Wetland of Special State Concern 1/3 mile downstream that contains a threatened species as defined by Maryland Department of Natural Resources (DNR).

The Maryland Assessment and Scenario Tool (MAST), a model developed by the Chesapeake Bay Program, is used by Howard County to establish baseline pollutant loads, plan restoration work, and model progress toward meeting stormwater wasteload allocations (WLA). MAST acknowledges the importance of stream buffers, noting that riparian area should be managed "to maintain the integrity of stream channels and shorelines, to reduce the impacts of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals." *Maryland Assessment and Scenario Tool General Features and User's Guide*, Appendix 3 – Table of BMP Definitions (2011). MAST uses a minimum 35-foot buffer.

The Proposed Stream Restoration Easement Buffer

The proposed Stream Restoration Easement overlay for the Maple Dell Farm includes a 50-foot buffer on each side of the stream bank. Preservation of a buffer area is necessary to protect the stream restoration and water quality. One of the important questions for Stream Restoration Easement overlays is what size of buffer is appropriate. To some extent this may depend on the characteristics of the specific property involved. However, standard guidance indicates that a buffer of 35-100 feet per side from top of bank is necessary to adequately protect

stream restoration projects. NRCS Riparian Forest Buffer Standard - Code 391; Maryland DNR Stream Re-leaf Coordinating Committee; MAST; Howard County Code.

The proposed buffer will generally be 50-feet, at the maximum, per side from top of bank. The actual size will vary somewhat in order to have a uniform boundary line, instead of a squiggly line following the meandering stream, which is logistically necessary in order for efficient fence construction, but 50-feet is the proposed maximum. This is in accord with Howard County law, NRSC standards, and MDA, Maryland DNR, and Chesapeake Bay Program recommendations, and it supports agricultural use outside of the overlay boundary.

Conclusion

In sum, Howard County believes that the proposed Stream Restoration Easement overlay supports the goals of agricultural land preservation, supports the preservation of agriculture on the Maple Dell Farm, supports broader resource conservation goals important to the State, including water quality, and is in keeping with existing MALPF law and policy regarding easement overlays. The proposed overlay supports the existing MALPF easement and Howard County asks that it be approved.

TECHNICAL RESOURCES

NRCS Riparian Forest Buffer Standard - Code 391

www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_026098.pdf

MDA Nutrient Management Manual

mda.maryland.gov/resource_conservation/Pages/nm_manual.aspx

Maryland DNR Stream ReLeaf Project and Chesapeake Bay Program

dnr2.maryland.gov/forests/Pages/programapps/ripfbi.aspx

dnr2.maryland.gov/forests/Pages/publications/buffers.aspx

Effects of water borne nitrogen on livestock

dnr2.maryland.gov/forests/Pages/publications/Excess-Nitrogen.aspx

Maryland Assessment and Scenario Tool (MAST)

www.mastonline.org/About.aspx



Howard County

Internal Memorandum

Subject: Rationale of Site Selection – Stream Restoration on Maple Dell Farm, Inc., a Patrick Family Farm

To: Darla Herbold, CPPO, Purchasing Administrator

Through: James A. Caldwell, Office of Community Sustainability

From: Lindsay A. DeMarzo, Office of Community Sustainability

Date: July 6, 2016

Current Site and Stream Conditions

Maple Dell Farm, Inc. ("the Farm") is a 96 acre active dairy and row crop farm, one of three remaining dairy farms in Howard County. Currently, 190 dairy cattle roam throughout the floodplain on the Farm, including previously having full access to nearly the entire length of stream channel. The herd is currently able to access the stream at designated locations for watering and crossing to pastures on the opposite bank of Cattail Creek. Because of the heavy use this land sees on a daily basis, erosion is evident along the entire stream and heavy sedimentation is visible in the stream. The majority of the stream channel has no trees or vegetation lining the banks and averages a 4 foot eroded bank throughout the property. A few sections of the stream bank have been compacted and slope down to the stream where the cattle regularly access, wallow, or cross the stream. Significant levels of nitrogen and phosphorus enter the stream from waste while the cattle are in the stream and floodplain, as well as, waste runoff from the adjoining pasture.

The cattle feeding areas are roughened concrete floors, which are scraped and cleaned according to their nutrient management plan. However, the ridges in the floor prevent full removal of manure and urine, which is then washed off during precipitation events to the stream.

Project Proposal

The project will fence cattle out of approximately 16.5 acres of floodplain, currently used as pasture. Three cattle stream crossings will be improved and fenced off to prevent upstream and downstream access along the stream. A new water system will be installed for the cattle to access clean water from troughs placed throughout the pasture.

A combination of Priority I and Priority II Natural stream channel restoration of the entire 6,182 linear feet of stream and riparian wetland will include a combination of some of the following but is not limited to log and boulder vanes, brush toes, root wads, stone and woody riffle grade controls, coir matting and bank modification. Field areas adjacent to the stream and restored wetland will temporarily hold, infiltrate, and treat stormwater flow, restoring the groundwater table and returning the historic hydrology to the land.

Native herbaceous and forested plant communities will be reestablished in the project area to create a stream buffer, reduce erosion, filter nutrients, and slow stormwater flowing to the stream. Any restored wetland areas will have potential to support shallow vernal pool habitat.

Benefits of Restoration

Drinking Water Protection

The Farm is located on either side of Cattail Creek, within the Brighton Dam watershed (MDE 8 digit subwatershed), a subwatershed of the Patuxent River. Two smaller channels merge on the northwestern portion of the Farm to form the mainstem of Cattail Creek, which continues east through the Farm directly to the Triadelphia Reservoir, a major drinking water source for over a half million residents in Montgomery, Prince George's and Howard counties. Additionally, three first order tributaries form and enter Cattail Creek within the project area. All tributaries above Triadelphia Reservoir, which includes Cattail Creek, are classified by the State of Maryland as Use III-P: natural trout waters and public water supply. According to a 2006 MDE study, trout spawning areas are present within this watershed (study link below). Since Cattail Creek drains to the Reservoir, restoration work and stormwater management will directly reduce nitrogen, phosphorus, and sediment loading to the drinking water supply and improve trout spawning habitat.

Green Infrastructure Network and Habitat Improvements

The stream channel running through the Farm is a Howard County Green Infrastructure Network ("GI Network") corridor (a wildlife pathway connecting main habitat areas/hubs) that provides a unique link across major watershed boundaries, connecting the Patapsco and Patuxent watersheds. This corridor is 1 of only 5 corridors (2 of which are very questionable because of development) connecting the Patapsco and Patuxent watersheds. This cross watershed link provides a greater habitat range and increases the chance of species diversity and survival.

The Farm is located 1/3 mile upstream from a GI Network hub (a main habitat area) with a wetland containing a threatened species as defined by MDNR – Canada Burnet. The Farm's likely onsite wetland restoration will provide ideal habitat for the threatened species. Improving the protection of wildlife along the GI Network corridor running through the Farm, by increasing the stream buffer and habitat areas as well as improving water quality at the Farm, will increase the wildlife migration and movement along this corridor. This wildlife movement may in turn increase the population of the threatened plant species as seeds may be carried along by animals and birds to any restored wetland areas on the Farm.

The Maryland Department of the Environment report *Prioritizing Sites for Wetland Restoration, Mitigation, and Preservation in Maryland, May 31, 2006* rated the Cattail Creek subwatershed as "fair" for biological health and "non-supporting" for physical health. The report also recognizes there is a Nontidal Wetland of Special State Concern (WSSC) along Cattail Creek and makes the following recommendations:

"Specific recommendations for restoration:

- Restore wetlands and streams within the headwaters.
- Restore "gaps" in the Green Infrastructure network to natural vegetation, especially along waterways.
- Restore/create wetlands designed to provide water quality improvement function to the reservoir.
- Enhance WSSC by control of invasive species.

Specific recommendations for protection:

- Protect wetlands and streams within the headwaters.

- Protect areas within the Green Infrastructure network, especially waterways.
- Protect the WSSC buffer.
- Protect additional unprotected areas that are designated Ecologically Significant Areas.”

Outreach and Community Education

The Patrick Family already host regular school groups at the Farm and work closely with Howard Soil Conservation District. The restoration and stormwater management work on the Farm will provide additional educational opportunities for the community. Signage will be placed along the project area to be visible both from the road and for school groups on the Farm. Educational tours of the Farm will be able to include an overview of the importance of stormwater management, healthy streams, reducing pollution to drinking water sources, and improving habitat. Once completed, this portion of Cattail Creek will quickly become a post card image of a meandering, healthy stream in Howard County and will serve as an example and inspiration for others to improve their local stream health. This project will also demonstrate the ability to implement and maintain good environmental practices in a modern farming operation and the positive outcomes of combining the two efforts.

Cost Effectively Treating Impervious Surface

The total impervious area for the Brighton Dam subwatershed is 105 acres. This project will treat nearly 64 acres or 61% of the total impervious within the subwatershed. Since the Farm is near the bottom of the subwatershed, nearly all 105 impervious acres are upstream and will filter through the treatment practices installed. Reductions in nitrogen (approximately TN 799 lbs/yr), phosphorus (approximately TP 532 lbs/yr), and sediment (approximately TSS 802 tons/yr) are expected in Cattail Creek from the stream restoration, reforestation, and floodplain reconnection. These reductions will improve the water quality downstream of the Farm, particularly the wetland containing the threatened species, as well as the Reservoir. The reduction in nitrogen will generate nitrogen credits which can then be sold if desired.

This project will cost roughly \$66,500 per impervious acre treated, while the cost range in Howard County per impervious acre treated is \$55,000 - \$200,000. The efficiency and numerous benefits associated with this project and the ability to perform such a long section of stream restoration in one project and on one site should be taken into consideration when analyzing the cost per acre treated. The Farm site also allows for easy access for machinery and workers with few obstacles to work around.

Protecting Farmland

The Farm is under a Maryland Agricultural Land Preservation Foundation (MALPF) easement, demonstrating the family’s dedication to farming and preserving the land. Howard County will acquire an additional permanent conservation easement on the area of the site where any restoration work is conducted.

Currently the dairy cattle access the floodplain, as well as the stream channel in designated areas. The walkways of the cattle and their general use of the land led to increased erosion and sediment in the stream, while the manure increases the nitrogen and phosphorus levels in the stream. The restoration and BMPs would remove the cattle from nearly 17 acres of floodplain by reducing their access, as well as treat runoff flowing from pasture and crop land. The restoration project will have minimal effect on the farming operation, thus demonstrating the potential for positive relationships between active farming and environmental stewardship. As part of the project approximately 10 acres of timber will

be thinned on the western boundary of the farm to create new shaded pasture to offset the loss of pasture in the floodplain. This work will be responsibly undertaken with any required permits and consultation with local, state and federal agencies as needed. The steeper slopes on the new pasture will remain forested to prevent erosion and also provide shade. The thinned areas will be immediately stabilized with temporary and permanent pasture grasses and mulched.

Piloting Future Private Property Restoration Efforts

Howard County's main stormwater management challenge is finding available land to install stormwater treatment facilities. The County is approaching the maximum installation opportunities on public lands and will be forced to focus future projects on private land. The Farm can serve as a model for future projects identified on private lands with similar, multiple, and varied community and environmental benefits. The Farm project will also serve as a pilot for collaborating with State and Federal regulatory agencies to define more effective and efficient permitting and restoration projects.

Prioritizing Sites for Wetland Restoration, Mitigation, and Preservation in Maryland. May 31, 2006 - Maryland Department of the Environment

<http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&ved=0CDsQFjAE&url=http%3A%2F%2Fwww.mde.state.md.us%2Fassets%2Fdocument%2Fwetlandswaterways%2FHO.pdf&ei=ET0QVZi1GeGCsQSVt4KQDA&usg=AFQjCNGxpmJvaJHDIFGQtGr2pfMtyCU2Xw&sig2=6XhlK9lZy34eEdo0A8kpXg>